

67,200-530
2001-0063

when the wafer is guided into a center position by the sloped surface on the tip portion of the at least four support fingers, or the step of providing four support fingers that are vertically mounted on the lifter body. The method may further include a step of fabricating the lifter body with a material that has a rigidity of at least that of aluminum, or the step of fabricating the lifter body with aluminum or stainless steel.

Brief Description of the Drawings

020 These and other objects, features and advantages of the present invention will become apparent from the following detailed description and the appended drawings in which:

021 Figure 1 is a cross-sectional view of a conventional physical vapor deposition chamber illustrating a wafer lifter situated inside the chamber.

022 Figure 2 is a perspective view of the conventional physical vapor deposition chamber of Figure 1.

023 Figure 3 is a perspective view of the present invention wafer lifter with improved wafer support fingers.

024 Figure 4A is a cross-sectional view illustrating the present invention wafer lifter in a lifted position.

025 Figure 4B is a cross-sectional view of the present invention wafer lifter in a wafer released position.

026 Figure 4C is a cross-sectional view of the present invention wafer lifter in a process position.

027 Figure 5A is an enlarged, cross-sectional view of the tip portion of a conventional support finger.

028 Figure 5B is an enlarged, cross-sectional view of the tip portion of a present invention support finger.

Detailed Description of the Preferred Embodiment

029 The present invention discloses an apparatus and a method for self-centering a wafer onto a wafer pedestal situated in a physical vapor deposition chamber, i.e., in a sputter chamber.

030 The apparatus of a wafer lifter is used for self-centering a wafer onto the pedestal which is constructed by a

lifter body of annular shape that has a center cavity with a diameter larger than a diameter of the wafer pedestal; at least four support fingers emanating upwardly from the lifter body at approximately 90° and are substantially equally spaced apart from each other; and a platform on a tip portion of each of the at least four support fingers defined by a slanted surface as measured from a vertical plane of an outside surface of the support finger. When a wafer is supported by the platform of each of the at least four support fingers, substantially no gap is formed between the slanted surface and the outer periphery of the wafer.

031 Referring now to Figure 3, wherein a present invention wafer lifter 40 is shown. The wafer lifter consists of a lifter body 42 formed of an annular, or ring-shape with a center cavity 44. The center cavity 44 has a diameter that is larger than a diameter of the wafer pedestal 20 (shown in Figure 2) such that a wafer can be loaded onto the pedestal 20 when the lifter 40 is lowered onto the pedestal. The lifter body 42 further includes at least four support fingers 46 each emanating upwardly from a top surface 48 of the lifter body 42 and are spaced-apart from each